(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 20 October 2005 (20.10.2005)

PCT

(10) International Publication Number WO 2005/096712 A2

(51) International Patent Classification: Not classified

(21) International Application Number:

PCT/JP2005/007196

(22) International Filing Date: 7 April 2005 (07.04.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

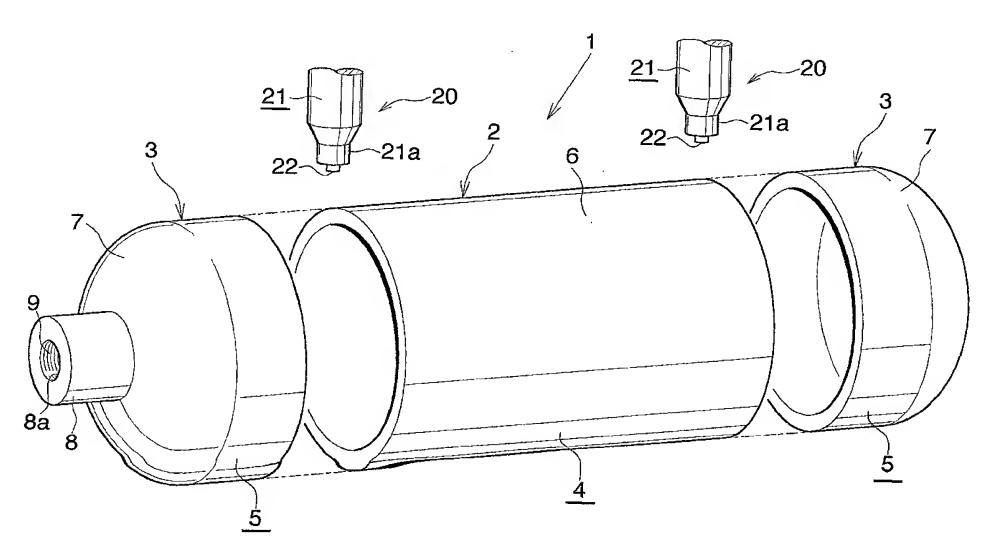
2004-114416 8 April 2004 (08.04.2004) JP 60/561,534 13 April 2004 (13.04.2004) US

- (71) Applicant (for all designated States except US): SHOWA DENKO K.K. [JP/JP]; 13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo 1058518 (JP).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): KANNO, Yasuharu [JP/JP]; c/o SHOWA DENKO K.K., OYAMA REGIONAL OFFICE, 480, Inuzuka 1-chome, Oyama-shi, Tochigi 3238678 (JP). OSAME, Yasuhiro [JP/JP]; c/o SHOWA DENKO K.K., OYAMA REGIONAL OFFICE, 480, Inuzuka 1-chome, Oyama-shi, Tochigi 3238678 (JP).

- (74) Agents: HIBI, Norihiko et al.; c/o KISHIMOTO & CO., 3rd Floor, Inaba Building, 13-18, Nishishinsaibashi 1-chome, Chuo-ku, Osaka-shi, Osaka 5420086 (JP).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: PROCESS FOR FABRICATING PRESSURE VESSEL LINER



(57) Abstract: A process for fabricating a pressure vessel liner 1 comprising a tubular trunk 2 and two head plates 3 for closing opposite end openings of the trunk 2 by joining a first liner component 4 having a peripheral wall 6 provided with opposite end openings for providing the trunk 2 to two second liner components 5 each having a dome-shaped peripheral wall 7 for providing the respective head plates 3. The peripheral walls 6, 7 of the liner component 4 and each of the second liner components 5 are brought into contact with each other, a probe 22 of a friction agitation joining tool 20 is placed into the two liner components across the contact portions thereof, and the probe 22 in rotation is thereafter moved relative to the two liner components 4, 5. Assuming that the number of revolutions of the probe 22 is R rpm and that the speed of joining of the two liner components 4, 5 is V mm/min, R/V is in the range of $2 \le R/V \le 12$. The process prevents a reduction in the strength of the joint between the liner components, and assures high productivity without impairment

WO 2005/096712 A2



Published:

without international search report and to be republished upon receipt of that report For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.